ANBCA2

ANALYTICAL BIOCHEMISTRY

An International Journal of Analytical and Preparative Methods

EDITORIAL COMMITTEE

N. O. KAPLAN, *Co-Chairman* W. D. McELROY, *Co-Chairman*

EXECUTIVE EDITORS

J. N. ABELSON
S. L. BERGER
L. BRAND
W. DE JONG
M. DeLUCA
T. FRIEDMANN
W. F. HARRINGTON
J. E. HEARST
W. B. JAKOBY
M. D. KAMEN
Y. C. LEE
L. LEVINE
W. M. LOVENBERG
O. H. LOWRY
K. MOSBACH
J. J. PISANO
N. S. RADIN
J. F. RIORDAN
E. ROZENGURT
J. E. SEEGMILLER
B. L. VALLEE

W. S. ALLISON, *Assistant to Co-Chairmen*

FOUNDING EDITOR

ALVIN NASON

Volume 124, 1982

ACADEMIC PRESS

A Subsidiary of Harcourt Brace Jovanovich, Publishers

New York London
Paris San Diego San Francisco São Paulo Sydney Tokyo Toronto

Copyright © 1982 by Academic Press, Inc.

All Rights Reserved

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

The appearance of the code at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use, or for the personal or internal use of specific clients. This consent is given on the condition, however, that the copier pay the stated per copy fee through the Copyright Clearance Center, Inc. (21 Congress Street, Salem, Massachusetts 01970), for copying beyond that permitted by Sections 107 or 108 of the U. S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Copy fees for pre-1982 articles are the same as those shown for current articles.

MADE IN THE UNITED STATES OF AMERICA

CONTENTS OF VOLUME 124

NUMBER 1, JULY 15, 1982

The Examination and Quantitation of Tissue Cytosolic Receptors for 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin using Hydroxylapatite
T. A. Gasiewicz and R. A. Neal 1

Two-Dimensional Separation of Phosphoamino Acids from Nucleoside Monophosphates
M. Manai and A. J. Cozzone 12

Standardized Method for the Determination of Human Erythrocyte Membrane Adenosine Triphosphatases
Matti Reinila, Ewen MacDonald, Norman Salem, Jr., Markku Linnoila, and Eberhard G. Trams 19

Arsenazo I and Tetramethylmurexide as Optical Calcium Indicators
P. L. Dorogi, U. Santarius, and E. Neumann 27

The Use of High-Performance Liquid Chromatography in the Isolation and Analysis of Oligoribonucleotides Synthesized by the T4 RNA Ligase Reaction
Larry W. McLaughlin and Elena Romaniuk 37

Assay of Calmodulin with *Bordetella pertussis* Adenylate Cyclase
Alan Goldhammer and J. Wolff 45

Preparation of Nucleotide-Free Elongation Factor Tu and Its Stabilization by the Antibiotic Kirromycin
Ottavio Fasano, Jean-Bernard Crechet, and Andrea Parmeggiani 53

A Colorimetric Assay for Chemical Heparin in Plasma
Michael D. Klein, Robert A. Drongowski, Robert J. Linhardt, and Robert S. Langer 59

An Improved Method for the Determination of Oligonucleotide Chain Length Using Phosphodiesterase Hydrolysis and Ion-Pair High-Performance Liquid Chromatography
Jonathan B. Crowther, John P. Caronia, and Richard A. Hartwick 65

Isolation of a Lipopolysaccharide Antigen from the Reiter Treponeme by a Two-Step Chromatographic Method
C. Sand Petersen, N. Strandberg Pedersen, and N. H. Axelsen 74

A Rapid Spot-Plate Technique for Monitoring Dehydrogenase Activities following Column Chromatography
Robert L. Rimsay and James C. Orr 79

Purification of Glycogen Phosphorylase *b* from AMP-Aminohydrolase Activity
Carmen Barón, Pedro L. Mateo, Manuel Cortijo, and Juan S. Jiménez 84

Ultraviolet Imaging: A Simple Method for Detecting Nucleic Acids in Preparative Gels
Patrick Clarke, Hun-Chi Lin, and Gary Wilcox 88

Solid-Phase Immunoassay for the Vitamin B_{12}-Binding Protein Transcobalamin II in Human Serum
Marijke Fráter-Schröder, Lucja Kierat, Roger Y. Andres, and Jürg Römer 92

The Assay of Peroxidases by Means of Dicarboxidine on Enzyme-Linked Immunosorbent Assay Level
K. G. Paul, P. I. Ohlsson, and N. Å. Jonsson 102

Dual-Column High-Performance Liquid Chromatographic Urinary Organic Acid Profiling
D. N. Buchanan and J. G. Thoene 108

Affinity Partitioning with Polymer-Bound Cibacron Blue F3G-A for Rapid, Large-Scale Purification of Phosphofructokinase from Baker's Yeast
G. Kopperschläger and G. Johansson 117

A Quantitative Assay of Deoxyribonucleic Acid Strand Breaks and Their Repair in Mammalian Cells *William F. Blakely, John F. Ward, and Eva I. Joner* 125
High Resolution Gel Chromatography of Proteins
Malte Rutschmann, Lothar Kuehn, Burkhardt Dahlmann, and Hans Reinauer 134
Gas Chromatographic–Mass Spectral Analysis of the Five-Carbon β-, γ-, and δ-Amino Alkanoic Acids
John R. Cronin, George U. Yuen, and Sandra Pizzarello 139
A General Method of α-Aminoaldehyde Synthesis Using Alcohol Dehydrogenase
Lars Andersson and Richard Wolfenden 150
Stoichiometry in the Assay of Ribulose Bisphosphate Oxygenase and Carboxylase
K. Purohit, B. A. McFadden, and Ashok Saluja 158
Assessment of Cisplatin Reactivity with Peptides and Proteins Using Reverse-Phase High-Performance Liquid Chromatography and Flameless Atomic Absorption Spectroscopy
Christopher M. Riley, Larry A. Sternson, and Arnold J. Repta 167
Detection of Subnanogram Amounts of RNA in Polyacrylamide Gels in the Presence and Absence of Protein by Staining with Silver
Marla J. Berry and Charles E. Samuel 180
A Convenient Large-Scale Method for the Isolation of Membrane Vesicles Permeable to a Specific Inorganic Ion: Isolation and Characterization of Functional Acetylcholine Receptor-Containing Vesicles from the Electric Organ of *Electrophorus electricus*
Alan B. Sachs, Bernard Lenchitz, Richard L. Noble, and George P. Hess 185
High-Performance Size-Exclusion Chromatography of Hydrolyzed Plant Proteins
Howard G. Barth 191
The Isolation of Peptides by High-Performance Liquid Chromatography Using Predicted Elution Positions *C. A. Browne, H. P. J. Bennett, and S. Solomon* 201
The Application of High-Performance Liquid Chromatography for the Resolution of Proteins Encoded by the Human Adenovirus Type 2 Cell Transformation Region
Maurice Green and Karl H. Brackmann 209
The Importance of Silica Type for Reverse-Phase Protein Separations
James D. Pearson, Nan T. Lin, and Fred E. Regnier 217

NUMBER 2, AUGUST 1982

A Noncomputerized Scanning Method for Determining Relative Protein Quantities and Synthesis Rates on Two-Dimensional Electrophoretic Gels
Wolfgang Quitschke and Nisson Schechter 231
A Redox Equilibrator for the Preparation of Cytochrome Oxidase of Mixed Valence States and Intermediate Compounds for X-Ray Synchrotron Studies
Britton Chance, Jonathan Moore, Linda Powers, and Y. Ching 239
Synchrotron X-Ray Studies of Biological Preparations at Low Temperatures with Optical Monitoring of Sample Integrity
B. Chance, W. Pennie, M. Carman, V. Legallais, and L. Powers 248
Enzyme–Gas Chromatography: Theoretical and Experimental Aspects
S. Pulvin, M. Sharan, and D. Thomas 258
Discontinuous Agarose Electrophoretic System for the Recovery of Stained Proteins from Polyacrylamide Gels *Roy S. Wu, John D. Stedman, Michael H. P. West, Panagiotis Pantazis, and William M. Bonner* 264

Amine Boranes as Alternative Reducing Agents for Reductive Alkylation of Proteins *Judy C. Cabacungan, Ahmed I. Ahmed, and Robert E. Feeney* 272
Analysis of Porphyrin Carboxylic Acids in Biological Fluids by High-Performance Liquid Chromatography *Momoko Chiba and Shigeru Sassa* 279
Convenient Selection of Monoclonal Antibodies to Isoenzymes of Placental Alkaline Phosphatase Using the Catalytic Activity of the Antigen in Enzyme–Antigen Immunoassay *Ronald Jemmerson and William H. Fishman* 286
Formation of Isotonic Nycodenz Gradients for Cell Separations *T. C. Ford and D. Rickwood* 293
A Cheap, Time- and DNA-Saving Device for the Electrophoretic Elution of DNA from Gels *Andreas Clad and Hermann Geri* 299
High-Performance Liquid Chromatographic Analysis of Porphyrins and Their Isomers with Radial Compression Columns *Andreas Seubert and Sigrid Seubert* 303
Continuous Titration of Difference Absorption upon Binding of 4-Methylumbelliferyl Glycosides to Concanavalin A and Peanut Agglutinin *Hilde De Boeck, Frank G. Loontiens, and Clement K. De Bruyne* 308
Rapid Purification of Dehydrogenases by Affinity Chromatography with Ternary Complexes *Gregory W. Svanas and Henry Weiner* 314
Quantitation of L-*glycero*-D-*manno*-Heptose and 3-Deoxy-D-*manno*-octulosonic Acid in Rough Core Lipopolysaccharides by Partition Chromatography *Robert C. Seid, Jr., Herman Schneider, Sophia Bondarew, and Robert A. Boykins* 320
Use of Chromatofocusing in the Purification of Tryptophanyl-tRNA Synthetase from *Bacillus stearothermophilus* *Charles W. Carter, Jr., and David C. Green* 327
A Radioactive Assay for Acetylcholinesterase Using Anion-Exchange Disk *Richard K. Gordon, B. P. Doctor, and Peter K. Chiang* 333
Deaminating Enzyme Labels for Potentiometric Enzyme Immunoassay *C. R. Gebauer and G. A. Rechnitz* 338
Lowry Protein Determination on Membrane Preparations: Need for Standardization by Amino Acid Analysis *W. H. M. Peters, A. M. M. Fleuren-Jakobs, K. M. P. Kamps, J. J. H. H. M. de Pont, and S. L. Bonting* 349
Fructose as a Carbohydrate Source Yields Stable pH and Redox Parameters in Microcarrier Cell Culture *Toshiko Imamura, Charles L. Crespi, William G. Thilly, and Henri Brunengraber* 353
A Method for Determination of Carbon Dioxide Specific Radioactivity and Concentration in Blood, Rumen Fluid, and Expired Air *Richard W. Russell and Jerry W. Young* 359
The Isolation of Alpha-1-Protease Inhibitor by a Unique Procedure Designed for Industrial Application *Charles B. Glaser, Mario Chamorro, Robert Crowley, Lucy Karic, Anne Childs, and Minerva Calderon* 364
Affinity Chromatography without Immobilized Ligands; A New Method for Studying Macromolecular Interactions Using High-Performance Liquid Chromatography *Shigeru Endo, Hidechika Hayashi, and Akiyoshi Wada* 372
Ultrafiltration–Light Absorption Spectrophotometric Determination of Silicon in Blood *Milan Ihnat* 380
Electrophoretic Transfer of Proteins from Sodium Dodecyl Sulfate–Polyacrylamide Gels to a Positively Charged Membrane Filter *Jonathan M. Gershoni and George E. Palade* 396

High-Pressure Liquid Chromatographic Procedure for the Determination of ε-(γ-Glutamyl)Lysine in Proteins *M. Griffin, J. Wilson, and L. Lorand* 406
An Ethidium–Acrylamide Affinity Medium for Recovery of Nucleic Acids from Free Solution and from Polyacrylamide and Agarose Gels *Ann Treece Vacek, Don P. Bourque, and N. Gail Hewlett* 414
A High-Performance Liquid Chromatographic Method to Measure $^{32}P_i$ Incorporation into Phosphorylated Metabolites in Cultured Cells *Eric S. Sharps and Richard L. McCarl* 421
Isolation and Assay of Red-Cell Inositol Polyphosphates *Grant R. Bartlett* 425
A Separation Chamber to Sort Cells and Cell Organelles by Weak Physical Forces. III. Preparative Electrophoresis of Cells in Stationary Density Gradients at Low Electric Field Strength *A. Tulp, A. Timmerman, and M. G. Barnhoorn* 432
Compensation for Measuring Error Produced by Finite Response Time in Determination of Rates of Oxygen Consumption with a Clark-Type Polarographic Electrode *Sotaro Ito and Toshimasa Yamamoto* 440
Fluorometric Measurement of Furfural and 5-Hydroxymethylfurfural *Trevor A. Walmsley and Michael Lever* 446
AUTHOR INDEX FOR VOLUME 124 452

The Subject Index for Volume 124 will appear in the December 1982 issue as part of a cumulative index for the year 1982.

INFORMATION FOR AUTHORS[1]

Analytical Biochemistry is an international journal that will publish original articles on methods of interest to the biochemical sciences and all fields that impinge on biochemical investigation. In addition to the expected techniques that apply to biochemical preparations and analysis, the following should be considered as within the scope of the journal:

— Cell and tissue culture techniques that are of general application.

— Sequencing and synthesis of nucleic acids; chemical mutagenesis.

— Purification methods for enzymes and other proteins when a high level of purity has been achieved.

— Immunochemical techniques, both analytical and preparative, if they are of general applicability by biochemists. Included are radioimmunoassays, but only if a unique approach is introduced rather than the determination of a substance not previously assayable.

— Pharmacological and toxicological research techniques that have a biochemical approach.

— Review articles dealing with timely topics. Although these are generally invited, unsolicited manuscripts will be considered.

Manuscripts are accepted for review with the understanding that the same work has not been and will not be published nor is presently submitted elsewhere, and that all persons listed as authors have given their approval for the submission of the paper; further, that any person cited as a source of personal communications has approved such citation. Written authorization may be required at the Editor's discretion. Articles and any other material published in *Analytical Biochemistry* represent the opinions of the author(s) and should not be construed to reflect the opinions of the Editor(s) and the Publisher.

Authors submitting a manuscript do so on the understanding that if it is accepted for publication, copyright in the article, including the right to reproduce the article in all forms and media, shall be assigned exclusively to the Publisher. The Publisher will not refuse any reasonable request by the author for permission to reproduce any of his or her contributions to the journal.

Address. Manuscripts should be submitted in triplicate to ***Analytical Biochemistry*, Editorial Office, Seventh Floor, 1250 Sixth Avenue, San Diego, California 92101.** In the case of rejected manuscripts, only one copy of the manuscript will be returned to the author.

Manuscripts should be concise and consistent in style, spelling, and use of abbreviations. In order to facilitate the processing of manuscripts, the journal now requests that at least four copies be submitted, each copy to include all figures (originals or glossy prints) and tables. The original copy must be typewritten, double-spaced, on one side of white bond paper, about 8½ × 11 inches in size, with one-inch margins on all sides. Each manuscript should have a separate title page noting title of article, authors' names (without degrees), a running title (not exceeding 35 letters and spaces), an abstract (50–150 words), and the address to which proof should be mailed. In creating a title for your paper, please omit words such as *novel, rapid, improved, simple, sensitive, efficient, convenient, new.* Each is felt to be redundant and actually slows down the reader who is scanning the article titles and wants to know more about the method itself. Please substitute informative words that will give readers a more complete idea of the usefulness of your paper with regard to the limitations of their equipment or sample type. For example, what *kind* of method are you describing? **Authors should indicate the following on the title page: (1) the appropriate subject category for listing in the Table of Contents; (2) six descriptive key words for computer-aided selection of reviewers.** These words will also be used in the preparation of the annual cumulative subject index for the journal. Please number all pages of the manuscript.

Text. The suggested organization of an article is: abstract; introductory statement; materials and general methods; results; discussion; acknowledgment; references. Some of these sections may be combined if the presentation is thereby made clearer or more effective. Although this is the general form, the journal will accept short papers of approximately two printed pages that are arranged without specific sections except for a short abstract.

Names of chemical or organic substances should follow the recommendations of the IUPAC–IUB Combined Commission on Biochemical Nomenclature (CBN) as published in the extended Information for Authors, appearing in the July 15, 1981 issue of this journal.

Authors should draw attention to any particular chemical or biological hazards that may be involved in carrying out the experiments described. Any relevant safety precautions should be described; if an accepted code of practice has been followed, a reference to the relevant standards should be given.

---

[1] An extended Information for Authors was published in the July 15, 1982 issue. Reprints are available from the Editorial Office. Authors should consult this Information for details on nomenclature, IUPAC–IUB rules and recommendations, and accepted abbreviations.

Figures should be numbered consecutively with Arabic numerals in order of mention in the text; each figure should have a descriptive legend. Legends should be typed together on a separate sheet, double-spaced. All illustrations should be in finished form ready for the engraver. A convenient size for drawings is 8½ × 11 inches (21 × 27.5 cm). Drawings should be made with India ink on tracing linen, smooth surface white paper, or Bristol board. Graph paper if used should be ruled in blue. Grid lines that are to show in the final engraving should be inked in black. Glossy prints properly prepared are acceptable.

Photographs must be kept to a minimum and should be glossy prints with strong contrasts; the magnification should be indicated by a scale where possible.

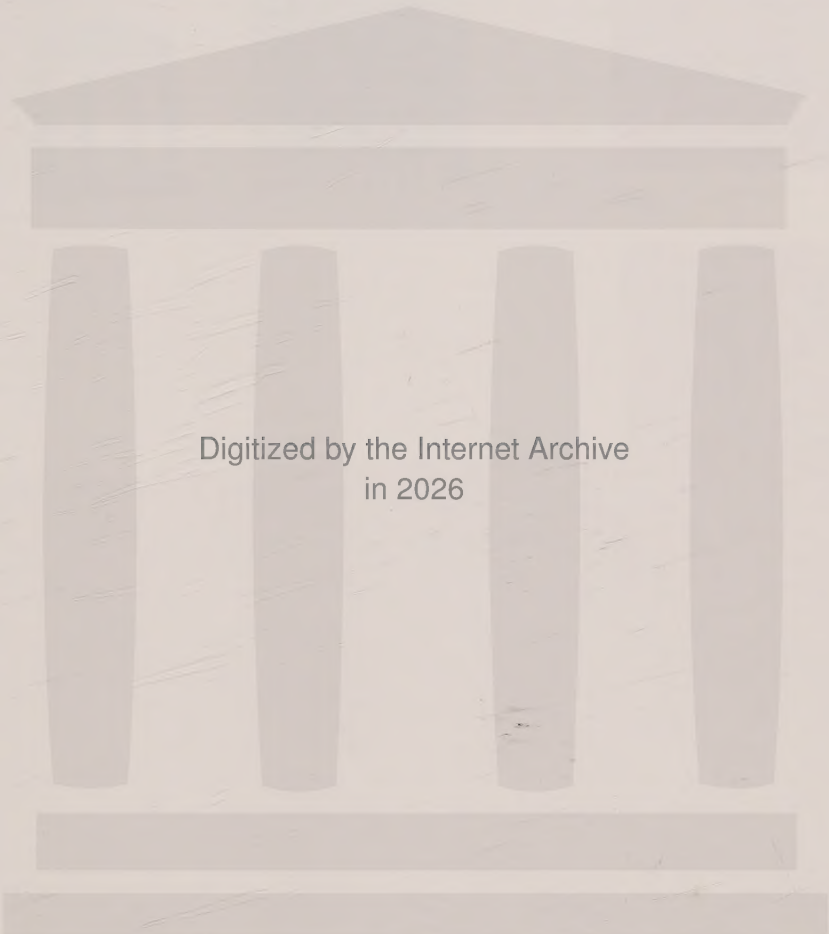
Tables should be typed on separate pages, numbered consecutively with Arabic numerals in order of mention in the text. All tables should have descriptive headings, typed (double-spaced) above the table.

Footnotes should be designated in text by superscript numbers and listed on a separate sheet; in tables, by superscript letters and placed at the bottom of the page containing the table.

References to the literature should be cited in the text by Arabic numerals in parentheses and listed at the end of the paper in consecutive order. Abbreviations of journal titles should follow the style used in Chemical Abstracts' *Service Source Index* (1969 Edition). Please note style of capitalization and punctuation for journal articles and edited books in the following examples:

1. Jones, J. B., Dilworth, G. L., and Stadtman, T. C. (1979) *Arch. Biochem. Biophys.* **125,** 255–260.
2. Metzler, D. E. (1977) Biochemistry: The Chemical Reaction of Living Cells, p. 298, Academic Press, New York.
3. Harrington, W. F. (1979) *in* The Proteins (Neurath, H., and Hill, R. L., eds), Vol. 4, pp. 246–409, Academic Press, New York.

Proofs. Proofs will be sent to the authors with reprint order forms. Fifty reprints of each article are provided free of charge. Additional reprints may be ordered using the form provided.



Digitized by the Internet Archive
in 2026

https://archive.org/details/analytical-biochemistry_1982_124_contents